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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,185	12/16/2004	Akihiko Matsuoka	MAT-8579US	5599

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EXAMINER	
CHEN, JUNPENG	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/518,185	MATSUOKA ET AL.	
	Examiner	Art Unit	
	Junpeng Chen	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/16/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

2.

Information Disclosure Statement

2. The information disclosure statement submitted on December 16, 2004 has been considered by the Examiner and made of record in the application file.

Preliminary Amendment

3. The present Office Action is based upon the original patent application filed on December 16, 2004 as modified by the preliminary amendment filed on December 16, 2004. **Claims 1 - 16** are now pending in the present application.

Objection - Drawing

4. Figure 1 is objected to because block 102 should be labeled as "instantaneous power calculator" instead of "non-linear distortion compensating section" and block 109 should be labeled as "non-linear distortion compensating section" instead of "instantaneous power calculator". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Objection - Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Nonlinear distortion compensation circuit with feedback and baseband reference signal that are phase and amplitude controllable.

Objection - Claim

6. Claim 2 is objected to because of the following informalities:

a.) On **line 2** of **claim 2**, replace the "amplifier" with to --amplitude--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 7, 11 and **13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of **claims 5, 7, 11** and **13** recites that "instead of the reference table updating section, a compensating coefficient calculator". By using the above phrase in each of the above claims, the recited "reference table updating section" would be excluded from being part of the transmission device as claimed. However, in claim 1, which each of claims 5, 7, 11 and 13 is directly and indirectly depending on, clearly claimed that the "reference table updating section" is part of the transmission device as claimed. Therefore, the above phrase renders each claim 5, 7, 11 and 13 indefinite.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **prior art admission by Applicant,** in view of **Hiroyuki Nagasaka (JP 2002-5773 A).**

Consider **claim 1**, prior art admission by Applicant discloses a transmission device comprising:

a non-linear distortion compensating section for compensating non-linear distortion of an orthogonal base-band signal digitally modulated by using non-linear distortion compensating data which compensates the non-linear distortion; a first orthogonal modulator for orthogonally modulating the orthogonal base-band signal undergone the non-linear distortion compensation; a modulation signal distributor for distributing a modulation signal formed by amplifying a signal orthogonally modulated by

the first orthogonal modulator; a phase/amplitude control section for controlling a phase and an amplitude of at least one of a distributed signal distributed by the modulation signal distributor, and a reference table updating section for updating the non-linear distortion compensating data undergone analog-digital conversion *(Read as a mobile communication system comprising a digital modulation method, which compensating the non-linear distortions uses a value of transmission base-band signal for referring to a distortion compensation table, thereby compensating non-linear distortions both in amplitude and phase. In this method, feedback of parts of transmission signals and update of the distortion compensation table allow the compensation to follow the changes in characteristics of the amplifier and orthogonally demodulates a feedback signal, and a resultant signal undergoes an analog-digital (A/D) conversion to form a digital feedback signal, which is then compared with orthogonal-modulation signal to be transmitted, thereby updating the distortion compensation table, lines 12-27 of specification of current application).*

However, prior art admission by Applicant discloses the claimed limitation above but fails to discloses that the phase/amplitude control section for controlling a phase and an amplitude of a reference signal based on the orthogonal base-band signal; and a signal combiner for combining a combinatory signal based on the distributed signal and the reference signal at least one of which signals phase and amplitude are controlled by the phase/amplitude control section and having the reference table updating section for updating the non-linear distortion compensating data based on the combinatory signal combined by the signal combiner and the orthogonal base-band signal.

Nonetheless, in related art, Hiroyuki Nagasaka *(See attached Translation by Thomson)* discloses a similar nonlinear distortion compensation method which use base band signal as a reference when obtaining compensation data by inputting base band signal into compensation data arithmetic section 10, Figure 9, paragraphs [0007] – [0008] (The use of base band signal as a reference signal is also clearly described in JP2002-141754 A, Figures 1, paragraph [0018]), and discloses that the signals be used for obtaining compensation data are phase/amplitude adjustable to the optimal value in the state of the maximum output when a nonlinear distortion compensating circuit is switched on *(paragraph [0042]-[0043] of Hiroyuki Nagasaka and lines 17-23 of specification of current application)*, and discloses an method of obtaining a combinatory signal by adding a distributed signal *(read as an output from distributor 21, figure 7, paragraphs [0051]-[0052])* and a modulated reference signal *(read an output from distributor 19, figure 7, paragraphs [0051]-[0052])* using adder 29. By incorporating the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, a person with ordinary skill in the art would be able to modify the transmission device taught by prior art admission by Applicant to use modulated base band signal as a reference signal to obtain a combinatory signal, and have the phase/amplitude control section to control its phase/amplitude, and designing the distortion compensation table to update the non-linear distortion compensating data based on the combinatory signal combined by the signal combiner and undergone analog-digital conversion and the orthogonal base-band signal.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant for the purpose of using the base band signal as a reference to extract a distortion component before the feedback goes into the demodulation process (paragraph [0051]).

Consider **claim 2**, **as applied to claim 1 above**, prior admission by Applicant, as modified by Hiroyuki Nagasaka, discloses

wherein the phase/amplitude control section controls a phase and an amplitude of the distributed signal, and the reference signal is generated by a second orthogonal modulator which generates a reference modulation signal by orthogonally modulating the orthogonal base-band signal, *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, a person with ordinary skill in the art would be able to modify the transmission device by prior art admission by Applicant to have the phase/amplitude control section to control the phase/amplitude of an output of distributor 21 (distributed signal) and the modulated base band reference signal, Figure 9 with paragraphs [0007] – [0008], Figure 7 with paragraphs [0051]-[0052]) of Hiroyuki Nagasaka).*

wherein the reference table updating section updates the non-linear distortion compensating data by using the orthogonal base-band signal and one of a demodulated signal obtained by an orthogonal demodulator which orthogonally demodulates the combinatory signal undergone the analog-digital conversion before outputting and a demodulated signal obtained by an orthogonal demodulator which provides the

combinatory signal with analog-digital conversion before outputting *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, the output of adder 29 (combinatory signal) was inputted into a quadrature demodulator and the transmission device would orthogonally demodulates a feedback signal, and a resultant signal undergoes an analog-digital (A/D) conversion to form a digital feedback signal, which is then compared with orthogonal-modulation signal to be transmitted, thereby updating the distortion compensation table, lines 23-27 of specification of current application).*

Consider **claim 3**, **as applied to claim 2 above**, prior admission by Applicant, as modified by Hiroyuki Nagasaka, discloses wherein at least one of the distributed signal supplied to the phase/amplitude control section from the modulation signal distributor *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, an output of distributor 21 supplied to the phase/amplitude control section, paragraph [0051]-[0052] of Hiroyuki Nagasaka), and* a signal supplied to the signal combiner from the second orthogonal modulator has undergone a frequency conversion *(read as the modulated base band signal above and the modulated base band signal are inherently undergone a frequency conversion during the modulation process by mixing the base band signal with a signal, for example, an signal from LO).*

Consider **claim 4**, **as applied to claim 3 above**, prior admission by Applicant, as modified by Hiroyuki Nagasaka, discloses a reference table for storing the non-linear distortion compensating data *(read as after incorporated the teachings of Hiroyuki*

Nagasaka into the teachings of prior art admission by Applicant, the distortion compensation table is for storing non-linear distortion compensating data, lines 23-27 of specification of current application).

Consider **claim 5**, **as applied to claim 3 above**, (See ***Claim Rejections - 35 USC § 112*** above), prior admission by Applicant, as by modified Hiroyuki Nagasaka, discloses the claimed invention above but fails to discloses a compensation coefficient calculator for calculating the non-linear distortion compensating data with a computing equation and a computing coefficient updating section for updating a coefficient of the computing equation.

However, Hiroyuki Nagasaka further discloses a circuit of the formula which makes feedback to an compensation data arithmetic section 10, it calculates compensation data and updates the compensation table, figure 9, paragraphs [0007].

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, which modified by Hiroyuki Nagasaka, for the purpose of calculating and updating the data in the compensation table.

Consider **claim 6**, **as applied to claim 2 above**, prior admission by Applicant, as modified by Hiroyuki Nagasaka, discloses a reference table for storing the non-linear distortion compensating data *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, the distortion compensation table is for storing non-linear distortion compensating data, lines 23-27 of specification of current application).*

Consider **claim 7**, **as applied to claim 2 above**, (See ***Claim Rejections - 35 USC § 112*** above), prior admission by Applicant, as by modified Hiroyuki Nagasaka, discloses the claimed invention above but fails to discloses a compensation coefficient calculator for calculating the non-linear distortion compensating data with a computing equation and a computing coefficient updating section for updating a coefficient of the computing equation.

However, Hiroyuki Nagasaka further discloses a circuit of the formula which makes feedback to an compensation data arithmetic section 10, it calculates compensation data and updates the compensation table, figure 9, paragraphs [0007].

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, which modified by Hiroyuki Nagasaka, for the purpose of calculating and updating the data in the compensation table.

Consider **claim 8**, **as applied to claim 1 above**, prior admission by Applicant, as by modified Hiroyuki Nagasaka, discloses

wherein the reference signal is created by a second orthogonal modulator which generates a reference modulation signal by orthogonally modulating the orthogonal base-band signal *(read as after incorporated with the teachings of Hiroyuki Nagasaka, the transmission device by prior admission by Applicants as above, an modulated base band signal would be used as the reference signal,* Figure 9 with paragraphs [0007] – [0008], Figure 7 with paragraphs [0051]-[0052]) *of Hiroyuki Nagasaka).*

wherein the phase/amplitude control section controls a phase and an amplitude of the reference modulation signal *(read as after incorporated with the teachings of Hiroyuki Nagasaka, the transmission device by prior admission by Applicants as above, the phase and the amplitude of the modulated base band signal would be controlled by the phase/amplitude control section,* paragraph [0042]-[0043] by *Hiroyuki Nagasaka and lines 17-23 of specification of current application);*

wherein the reference table updating section updates the non-linear distortion compensating data by using the orthogonal base-band signal and one of a demodulated signal obtained by an orthogonal demodulator which orthogonally demodulates the combinatory signal undergone the analog-digital conversion before outputting and a demodulated signal obtained by an orthogonal demodulator which provides the combinatory signal with analog-digital conversion before outputting *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, the output of adder 29 (combinatory signal) was inputted into a quadrature demodulator and the transmission device would orthogonally demodulates a feedback signal, and a resultant signal undergoes an analog-digital (A/D) conversion to form a digital feedback signal, which is then compared with orthogonal-modulation signal to be transmitted, thereby updating the distortion compensation table, lines 23-27 of specification of current application).*

Consider **claim 9**, **as applied to claim 8 above**, wherein at least one of a distributed signal supplied to the phase/amplitude control section from the modulation signal distributor, a signal supplied from the phase/amplitude control section to the

signal combiner *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, an output of distributor 21 supplied to the phase/amplitude control section and then supplied to adder 29, paragraph [0051]-[0052] of Hiroyuki Nagasaka), and* a signal supplied to the signal combiner from the second orthogonal modulator has undergone a frequency conversion *(read as the modulated base band signal above and the modulated base band signal are inherently undergone a frequency conversion during the modulation process by mixing the base band signal with a signal, for example, an signal from LO).*

Consider **claim 10**, **as applied to claim 9 above**, prior admission by Applicant, as modified by Hiroyuki Nagasaka, discloses a reference table for storing the non-linear distortion compensating data *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, the distortion compensation table is for storing non-linear distortion compensating data, lines 23-27 of specification of current application).*

Consider **claim 11**, **as applied to claim 9 above**, (See ***Claim Rejections - 35 USC § 112*** above), prior admission by Applicant, as by modified Hiroyuki Nagasaka, discloses the claimed invention above but fails to discloses a compensation coefficient calculator for calculating the non-linear distortion compensating data with a computing equation and a computing coefficient updating section for updating a coefficient of the computing equation.

However, Hiroyuki Nagasaka further discloses a circuit of the formula which makes feedback to an compensation data arithmetic section 10, it calculates compensation data and updates the compensation table, figure 9, paragraphs [0007].

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, which modified by Hiroyuki Nagasaka, for the purpose of calculating and updating the data in the compensation table.

Consider **claim 12**, **as applied to claim 8 above**, prior admission by Applicant, as modified by Hiroyuki Nagasaka, discloses a reference table for storing the non-linear distortion compensating data *(read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, the distortion compensation table is for storing non-linear distortion compensating data, lines 23-27 of specification of current application).*

Consider **claim 13**, **as applied to claim 8 above**, (See ***Claim Rejections - 35 USC § 112*** above), prior admission by Applicant, as by modified Hiroyuki Nagasaka, discloses the claimed invention above but fails to discloses a compensation coefficient calculator for calculating the non-linear distortion compensating data with a computing equation and a computing coefficient updating section for updating a coefficient of the computing equation.

However, Hiroyuki Nagasaka further discloses a circuit of the formula which makes feedback to an compensation data arithmetic section 10, it calculates compensation data and updates the compensation table, figure 9, paragraphs [0007].

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, which modified by Hiroyuki Nagasaka, for the purpose of calculating and updating the data in the compensation table.

Consider **claim 14**, **as applied to claim 1 above**, prior art admission by Applicant, as modified by Hiroyuki Nagasaka, discloses an orthogonal demodulator for one of orthogonally demodulating the combinatory signal undergone the analog-digital conversion, then outputting a resultant signal and converting the combinatory signal undergone orthogonal demodulation, then outputting a resultant signal (*read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, a combinatory signal was obtained and was inputted into an orthogonal demodulator that taught by prior act admission by Applicant, the demodulator would demodulate it and a resultant signal undergoes an analog-digital (A/D) conversion to form a digital feedback signal, lines 23-25 of the specification of current application)*; and

an adding circuit for adding the orthogonal base-band signal and the demodulated signal supplied from the orthogonal demodulator, wherein the reference table updating section updates the non-linear distortion compensating data by using an output from the adding circuit and the orthogonal base-band signal *(read as the compensation data arithmetic section 10 of Hiroyuki Nagasaka inherently existing an circuit, which utilizing the inputted modulated base band signal and the combinatory*

signal (output of demodulator) above to obtain compensation data, Figure 9 of Hiroyuki Nagasaka).

Consider **claim 15**, **as applied to claim 14 above**, prior art admission by Applicant, as modified by Hiroyuki Nagasaka, discloses the orthogonal base band signal to be added to the adding circuit is controlled its amplitude (*read as after incorporated the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant as above, the phase/amplitude of the base band signal would be controlled by the phase/amplitude control section, paragraph [0042]-[0043] of Hiroyuki Nagasaka and lines 17-23 of specification of current application).*

Consider **claim 1**, prior art admission by Applicant discloses a transmission device comprising:

a non-linear distortion compensating section for compensating non-linear distortion of an orthogonal base-band signal digitally modulated by using non-linear distortion compensating data which compensates the non-linear distortion; a first orthogonal modulator for orthogonally modulating the orthogonal base-band signal undergone the non-linear distortion compensation; a modulation signal distributor for distributing a modulation signal formed by amplifying a signal orthogonally modulated by the first orthogonal modulator; a phase/amplitude control section for controlling a phase and an amplitude of at least one of a distributed signal distributed by the modulation signal distributor, and a reference table updating section for updating the non-linear distortion compensating data undergone analog-digital conversion *(Read as a mobile*

communication system comprising a digital modulation method, which compensating the non-linear distortions uses a value of transmission base-band signal for referring to a distortion compensation table, thereby compensating non-linear distortions both in amplitude and phase. In this method, feedback of parts of transmission signals and update of the distortion compensation table allow the compensation to follow the changes in characteristics of the amplifier and orthogonally demodulates a feedback signal, and a resultant signal undergoes an analog-digital (A/D) conversion to form a digital feedback signal, which is then compared with orthogonal-modulation signal to be transmitted, thereby updating the distortion compensation table, lines 12-27 of specification of current application).

However, prior art admission by Applicant discloses the claimed limitation above but fails to discloses that the phase/amplitude control section for controlling a phase and an amplitude of a reference signal based on the orthogonal base-band signal; and a signal combiner for combining a combinatory signal based on the distributed signal and the reference signal at least one of which signals phase and amplitude are controlled by the phase/amplitude control section and having the reference table updating section for updating the non-linear distortion compensating data based on the combinatory signal combined by the signal combiner and the orthogonal base-band signal.

Nonetheless, in related art, Hiroyuki Nagasaka discloses a similar nonlinear distortion compensation method which use base band signal as a reference when obtaining compensation data by inputting base band signal into compensation data arithmetic section 10, Figure 9, paragraphs [0007] – [0008], and discloses that the

signals be used for obtaining compensation data are phase/amplitude adjustable to the optimal value in the state of the maximum output when a nonlinear distortion compensating circuit is switched on *(paragraph [0042]-[0043] of Hiroyuki Nagasaka and lines 17-23 of specification of current application)*, and discloses an method of obtaining compensating data by overlapping base band signal on the distortion component of a base band range by using a distributed signal *(read as an output demodulator 15, Figures 5, 6 and 7, paragraphs [0045]-[0052])) and a reference signal (read as I and Q signals, Figures 5, 6 and 7, paragraphs [0045]-[0052]))* using subtractors 16 and 17, or adders 31 and 32, Figures 5, 6 and 7, paragraphs [0045]-[0052]. By incorporating the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant, a person with ordinary skill in the art would be able to modify the transmission device taught by prior art admission by Applicant to use I and Q signals as a reference signals to overlap the base band signal on the distortion component of base band range, and have the phase/amplitude control section to control its phase/amplitude, and designing the distortion compensation table to update the non-linear distortion compensating data based on the distortion component of base band range combined by the signal combiner and undergone analog-digital conversion and the orthogonal base-band signal.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiroyuki Nagasaka into the teachings of prior art admission by Applicant for the purpose of using the base band signal as a reference to obtain compensating data that is good for base band range.

Consider **claim 16**, **as applied to claim 1 above**, prior art admission by Applicant, as modified by Hiroyuki Nagasaka, discloses that the signal combiner combines the distributed signal orthogonally demodulated and the reference signal into a combinatory signal *(read as the adders 31 and 32 above combines output of demodulator and base band signal above to obtain compensating data information, Figures 5, 6 and 7, paragraphs [0045]-[0052])*.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Moriyama; Yukihiro et al.	US 6091941 A	Radio apparatus

12. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junpeng Chen whose telephone number is (571) 270-1112. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Junpeng Chen
J.C./jc

October 02, 2006

EDAN ORGAD
PATENT EXAMINER/TELECOMM.
10/10/06